Rocky Intertidal Monitoring Protocol for the Redwood National and State Parks, CA

Standard Operating Procedure (SOP) # 12: Downloading Digital Photos and Photo Image Management

Version 1.00 (March 2008)

Revision History Log:

Previous Version	Revision Date	Author	Changes Made	Reason for Change	New Version
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This Standard Operating Procedure (SOP) provides specific procedures for the downloading of digital images following photograph documentation of photoplots in the field (SOP # 5: Photographing Plots and Taking Area Photos). The SOP provides details on how to download images, how to properly name images, and how to back up and/or archive photo records. The metadata that will accompany digital images is defined. However, metadata procedures will be more completely addressed in SOP #13: Metadata Guidelines.

I. General Considerations for Digital Records

Digital records are the preferred image media. Digital imagery refers to electronic images obtained using digital cameras. This section covers the download and naming of digital camera files from an Olympus C-5050 camera, but procedures should apply to most digital cameras and computers operating in the Microsoft XP operating system and having a Universal Serial Bus (USB) port connection. Consult specific equipment operating manuals and/or software user manuals as needed.

When taking images, you should adhere to the following guidelines (Mohren 2007):

1. The Klamath Network (KLMN) requires all images to be submitted in a Joint Photographic Experts Group (JPEG) format.
2. All images should be stored at as high a resolution as possible. At no time should images be taken with less than four megapixels of spatial resolution unless this goes beyond the operational limits of the equipment.

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3. Although some cameras can imprint date and time onto an image, this is not recommended. Date and time are embedded in JPEG headers by most cameras. In addition, imprinting an image can reduce the image quality and overall value.

II. Procedure for Downloading Images to PC Computer*

To download images, the following equipment is required: Olympus C-5050 digital camera with AC power cord adapter and USB cord, appropriate media card/s, and laptop or desktop PC computer with Microsoft XP or Windows compatible operating system.

(* Remote field sampling will require downloading images to a temporary folder on the laptop until that time when office transfer to network is possible).

1. Plug the AC power adapter into camera (preserves battery life).

2. Connect the camera to the computer with the USB cord.

3. Turn on the computer.

4. Turn on the camera, set to the camera's specified playback mode (e.g., Olympus C-5050: green forward arrow in box).

5. MS XP software will automatically open a window highlighting "Copy Pictures using MS Scanner and Camera Wizard" with a drive letter (e.g., E:). Click on **OK.**

6. "Welcome" pop-up window opens; select **Next.**

7. Thumbnails of images on the camera memory card are shown in the window below "Choose Pictures to Copy." Deselect any pictures you do not want to copy into computer folder by clicking on the image and un-checking the box. Select **Next.**

8. Type in a batch or "group name," all in lowercase: three letter **Site Code**, followed by underscore _, season (e.g., sp = spring or fa = fall), and two digit year (e.g., fkc_sp06).

9. Within the same window, choose destination folder for photos. Select **Next**.

10. Leave the "Delete photos… after copying them" box unchecked, as it is best to first check success of download before deleting photos.

11. When photos on the card need to be downloaded to another site folder, go back up to the "Choose Pictures to Copy" window and repeat steps after selecting appropriate image files to copy.

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12. When done with digital downloads, click on **Finish**.

13. Before turning off the camera, check that all the image files transferred successfully and make a backup copy on CD or flashdrive or insert a new flashcard in the camera, keeping the original card as the backup.

14. If the camera memory card is going to be used again, delete images ONLY after backing up, by going to the set-up menu in the camera and selecting "erase all images."

15. Next, click the "Disconnect Hardware Safely" icon (on lower right toolbar). A prompt will be given for the external drive (e.g., E: or F:, varies by computer). When the "Safely remove USB Mass Storage Device" appears, click on that message prompt.

16. Message that "It is safe to disconnect" appears. Disconnect USB cord from computer and remember to turn OFF the camera.

III. Procedure for Naming Digitized Photoplot Images

The naming standards described here are adapted from Jack Engle's Photo Label Standards (updated 4/01/05) and are for photoplot file names only. Digital image file names have been standardized and are meant to conform to MARINe naming convention.

The rationale for the photoplot file name standard includes the following:

1. Photo file name must be easy to understand and implement and compatible with typical database style.

2. Photo file names should not use spaces or special characters. The underscore is OK as a separator.

3. For simplicity and reducing possibility of errors, photo file names should include only lowercase letters.

4. Even though a photo database can organize files based on keywords, etc., it is best if file names are descriptive and display in a logical order. However, not all information needs to be included in the file name (directories can be used to separate some broad categories) and the file name should not be lengthy (<20 characters preferred).

There are six main types of information that have been incorporated into MARINe photoplot file names. This hierarchy (in order from general to specific) is as follows:

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1. **Site**: We will use standardized codes (lowercase) to conform with the database (Table 1).
2. **Target Species**: We will use the first three letters (lowercase) of the target species plot names in the database (Table 2). Using fewer than three letters could lead to ambiguities, while more letters unnecessarily lengthens the file name.
3. **Plot Number**: Plot identifiers should conform to consecutive #'s starting with "1" if possible (e.g., 1, 2, 3, 4, 5 ...).
4. **Date (Season/Year)**: Most of the core MARINe sampling takes place semi-annually (fall/winter and spring), though some northern sites are sampled annually (summer). Due to the nature of our sampling schedules (including limited number of adequate low tide periods, site access limitations, and weather delays), we have defined three sampling seasons (no winter), each four months long, as follows: fall = October-January; spring = February-May; and summer = June-September. This does not quite match the calendar year; thus, a sample in January 2005 would be listed as a Fall 2004 sample. Sites sampled in the winter months (i.e., December-January) are often referred to as fall/winter sampling periods but are entered as fall. Seasons will be abbreviated as lowercase two-letter codes (fall = fa, spring = sp, summer = su) and years will be abbreviated as the final two digits (e.g., 1997 = 97, 2004 = 04). Using these codes means the file names as listed in alphanumeric order will group all fall photos, followed by all spring photos, and then all summer photos. Also, years in the new century (2000s) will sort out before the 1900s. This partial breakdown of chronological order was not considered significant enough to change to lengthier and less intuitive file names since the eventual implementation of a photo database will allow all kinds of sorts, including chronological.
5. **Photo Replicate:** For each photoplot sampling, there will be at least two photos to store: 1) the photo used for scoring and 2) that same photo overlain with the grid of 100 dots). In addition, there may be one to two (or more) other photos, often representing different exposures (e.g., one more overexposed and one more underexposed). (Note: we should not label and organize photos that we are unlikely to use, such as duplicate exposures or poor quality extra photos.) To differentiate the various photos for a given plot, we will add a single lowercase letter after the year in the file name as follows:
   "a" = scored photo (no dot grid).
   "b," "c," "d," "e," or "f" = additional photos taken (e.g., different exposures).
   "g" = scored photo overlain with dot grid.

Based on the above criteria, the **MARINe photoplot digital photo name standard** shall be: **"site" "_" "target species" "plot #" "_" "season" "year" "replicate"**

Photoplot File Name Examples:
psn_maz2_fa04b.jpg = Pt Sierra Nevada, Mazzaella Plot #2, fall 2004, Replicate "b" (different exposure)

fkc_myt5_su05a.jpg = False Klamath Cove, Mussel Plot #5, summer 2005, Replicate "a" (scored photo)

IV. Procedure for Naming Other Digitized Images

For naming special photos, including reference overview and panoramic photos or other photos of interest, a systematic file naming convention will also be followed.

1. **Panoramic (Pan) Photos** are a series of pictures that document the site. It is VERY important that these be taken in approximately the same way/place every year. To name a pan, one should know from where the series was taken. Pan photos are usually part of a sequential pan of the reef and will be taken from reference points. Label the reference point as you would a plot number, for example "r1." When possible, the first of the series should be taken facing north and then rotating clockwise. The standard should look like this:
   "site" "_" pan "_" "point where taken" "_" "numerical order in the series (e.g., 2of4)" "_" "season year"
   Example: **fkc_pan_r1_7of10_fa97**

2. **Overview Photos** show general topography or detail of the site but are not in a series of photos (like pans). These show areas of interest that are taken year after year. For naming, follow similar procedures as photoplot naming with the following exceptions: instead of target species, use "area" and instead of plot #, use a descriptive word or number. The descriptive word is something that will differentiate the photo from other area photos (e.g., mussel_bed). The standard should look like this:
   "site" "_" area "_" "descriptive word/number" "_" "season year" "replicate"

3. **Species Photos:** These pictures are close-ups of a marine organism. They are typically used for species identification or documenting a sighting of an organism. The standard should look like this:
   "site" "_" species name (latin preferred, or common)" "_" "season year" "replicate"
   Example: srfr_s_purpuratus_fa06_b

4. **People Photos:** These are photos of people monitoring or in the field that do not fit into the area category. The standard should look like this:
   "site" "_" people "_" "descriptive word/number (if needed)" "_" "season year" "replicate"

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V. General Considerations for Submitting and Archiving Digital Records

Digital camera photos should be copied regularly to CD or DVD for archiving purposes. In addition, all images should be cataloged and metadata added using image management software according to the information management plan for the park.

The Project Manager should review the pictures and metadata, remove any photographs of poor quality, and submit the photographs and metadata to the KLMN Data Manager following the procedures and timeline outlined in SOP#17: Project Deliverables (Mohren 2006).

Metadata

The KLMN requires complete metadata for each image. Metadata can be submitted to the Network Data Manager via a correctly formatted Excel spreadsheet (Table 3).

Project-related photographs require additional metadata including:

1. Photograph name.
2. Project name.
3. Detailed description of the photograph (include names of individuals, species that occur in the photograph, general location names, site/plot/transect name or number, etc.).
4. Date the photograph was obtained.
5. Sensitivity comments. (Is there a reason this photo can not be distributed to the public?)
6. Easting and northing UTM location (when applicable).
7. Datum (default to NAD 83 zone 10).
8. Photographer.
9. Keyword (provided by the Network).
10. Collection (defaults to "KLMN").
11. Publisher (defaults to NPS).
12. Resource type (defaults to "Image").
13. Rights (default to "Public Domain").

File Structure and Folder Name

Photos being managed at the Network will be stored in the Intertidal project folder (e.g., G:\Monitoring\ Intertidal_Monitoring \Intertidal_Images) located on the KLMN shared drive. It will be the responsibility of the Data Manager to store all project images in this folder and place a copy of the images in the KLMN photograph folder. The photograph folder is linked to the Master Photograph Library database (G:\Library\Klamath Network Photographs Library), which is used to distribute photographs to Network staff.

Photograph Folder: The "Photographs" folder will contain all photographs managed by the Network. Photographs will be divided into "Category" folders that resided in the "Photographs" folder. Each category folder is used to separate the photographs into logical groups (Figure 1).

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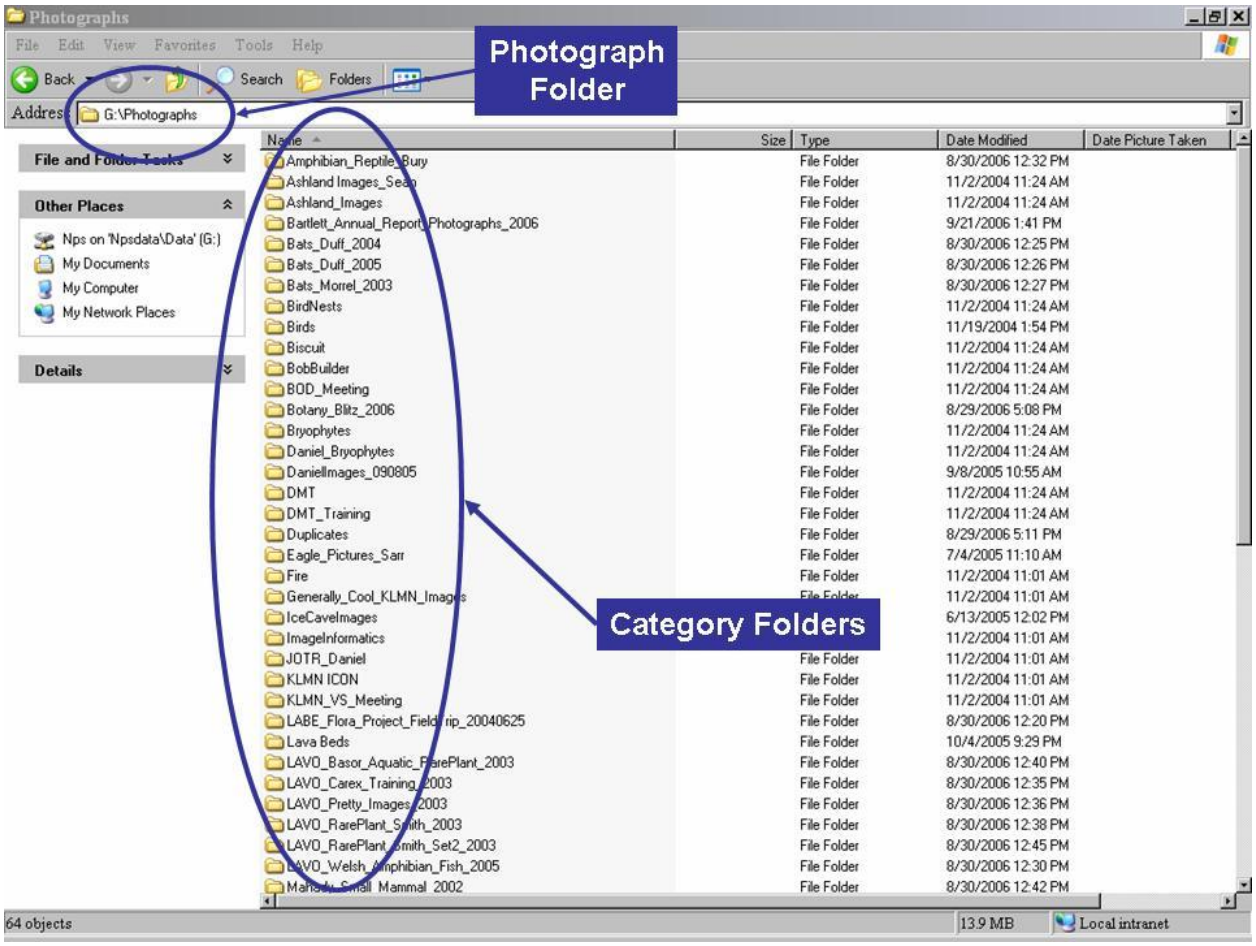

Figure 1. The Network Photograph folder with various category folders.

Category Folder: It is the responsibility of the individual downloading or saving an image to create and name the category folder. Naming conventions for category folders should meet the following standards.

1. Contains no spaces (separate with an underscore).
2. Has no special characters (e.g., &%@#*).
3. Includes a year in the format YYYYMMDD.
4. Describes the general theme of the group of photographs (e.g., Wildlife, Intertidal_2007, Panoramic_20070401, PhotoPlot_2007, Field Crew, etc.).
5. Includes the project name if applicable.

Project Folder: Each inventory or monitoring project has an associated standardized project folder located on the Klamath Network shared drive (Mohren 2007). Each project folder has an image folder entitled "*Project Name*_Images." All photographs and photograph metadata for a specific project will be stored in this folder. It is the responsibility of the Network Data Manager to make copies of these images and metadata

and incorporate them into the "Photographs" folder that is linked to the Network's Master Photograph Library database.

VI. Related Documentation

Mohren, S. 2006. Digital photograph management guidelines. Klamath Network, National Park Service, Ashland, OR.

VII. Literature Cited

Mohren, S. R. 2007. Data management plan, Klamath Inventory and Monitoring Network. Natural Resource Report NPS/KLMN/NRR--2007/012. National Park Service, Fort Collins, CO.

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Table 1. Site Codes used in naming digital images for the three RNSP monitoring locations.

Site Code	Regular Monitoring Location
DMN	Damnation Creek
END	Enderts
FKC	False Klamath Cove

Table 2. Three letter codes for "Target Species" in Photoplot File Naming.

Target Species	Code		Target Species	Code
Chthamalus/Balanus	**cht**		Mytilus	**myt**
Endocladia	**end**		Semibalanus	**sem**
Mastocarpus	**mas**		Silvetia	**sil**
Phyllospadix (surfgrass)	**phy**		Lottia gigantea	**lot**

Table 3. Required metadata table for photographs.

*Park Code	*Network Code	Project	*Photo Name	*Date	*Photographer	*Description	UTM East	UTM North	Datum	*Category Folder	*Ext.	*Rights	Collection	Publisher	Resource Type
	KLMN								Nad 83 Zone 10		.jpg		KLMN	NPS	Image
	KLMN								Nad 83 Zone 10		.jpg		KLMN	NPS	Image
	KLMN								Nad 83 Zone 10		.jpg		KLMN	NPS	Image
	KLMN								Nad 83 Zone 10		.jpg		KLMN	NPS	Image

1) * Required fields.
2) Populated fields are populated with their default values.
3) Fields include:
   Park Code – CRLA, LABE, LAVO, ORCA, REDW, WHIS
   Network Code – KLMN
   Project – Name of the project you are working on.
   Photo Name – Name of the photograph. Do NOT include the extension.
   Date – Date the photograph was taken in the format MM/DD/YYYY.
   Description – A DETAILED description of the photograph. Include the name of the site if applicable.
   UTM East and North – The UTM coordinates where the picture was taken, if applicable.
   Datum – The datum and zone for the UTM coordinates. The default is Nad83 Zone 10.
   Category Folder – The name of the folder where the picture is being stored.
   Ext. – The extension. The KLMN requires photographs to be in jpeg format.
   Right – Generally, rights are “Public.”
   Publisher – Owner of the photograph, usually NPS.
   Resource Type – What is it (e.g. Image, PPT, Graphic)? This is usually Image.